

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (Canceled)

Claim 2. (Currently Amended) An X-DSL modem supporting both a discrete multi-tone (DMT) line code and a carrierless amplitude and phase modulated (CAP) line code, and the modem comprising:

- a plurality of discrete components coupled to one another to form a transmit path and a receive path for processing data associated with at least one communication channel which exhibits either a DMT line code or a CAP line code; and the components including:

~~a coder for coding digital data in at least a discrete multi-tone (DMT) line code and a carrierless AM/PM (CAP) line code and vice versa;~~

an encoder component coupled to the transmit path for encoding data associated with the at least one communication channel exhibiting the CAP line code into QAM symbols and encoding data associated with the at least one communication channel exhibiting the DMT line code into DMT sub-symbols;

~~a Fourier transform engine coupled to the coder and operating as a base band to carrier band converter and vice versa for the digital data encoded in the DMT line code and as a filter for the digital data encoded with the CAP line code;~~

a Fourier transform component with an input coupled to the encoder component on the transmit path for transforming DMT sub-symbols

associated with the at least one communication channel exhibiting the DMT line code from a frequency-to-time domain and transforming QAM symbols associated with the at least one communication channel exhibiting the CAP line code from the time-to-frequency domain followed by a filtering step in the frequency domain and a subsequent transformation back from the frequency-to-time domain to effect a pulse shaping function on transmitted data associated with the at least one communication channel exhibiting the CAP line code without requiring a discrete pulse shaping component in the transmit path.

~~a converter coupled to the Fourier transform engine for converting between base band to carrier band and vice versa digital data in the CAP line code; and~~

~~an analog portion coupled to the converter for converting the digital data in the DMT line code and the CAP line code to an analog transmission and vice versa.~~

Claim 3. (Currently Amended) The XDSL modem of Claim 2 wherein the coder further comprises comprising:

~~an encoder on a transmit path for encoding the digital data; and~~

~~a decoder on a receive path for decoding the digital data.~~

the Fourier transform component further coupled to both the transmit path and the receive path for transforming received data associated with the at least one communication channel exhibiting the DMT line code from the time-to-frequency domain and transforming received data associated with the at least one communication channel exhibiting the CAP line code from the time-to-frequency domain followed by a filtering step in the frequency domain and a subsequent transformation back from the frequency-to-time domain to effect a feedforward equalizer function on received data associated with the at least

one communication channel exhibiting the CAP line code without requiring a discrete feedforward equalizer component in the receive path.

Claim 4. (Currently Amended) The XDSL modem of Claim 2, ~~wherein the converter further comprises~~ comprising:

~~an upconverter switchably coupled to a transmit path for base band to carrier band conversion of the digital data in a CAP line code; and~~

at least one upconverter component for upconverting data associated with the at least one communication channel exhibiting the CAP line code; and

at least one switch coupled to the Fourier transform component on the transmit path and to the at least one upconverter component to switchably couple the at least one upconverter component to the Fourier transform component for upconverting transmitted data from the Fourier transform component associated with the at least one communication channel exhibiting the CAP line code and to switchably uncouple the at least one from the upconverter component from the transmit path to avoid upconversion of transmitted data associated with the at least one communication channel exhibiting the DMT line code.

~~a downconverter switchably coupled to a receive path for carrier band to base band conversion of the digital data in a CAP/QAM line code.~~

Claims 5-7. (Canceled)

Claim 8. (Currently Amended) The X-DSL modem of Claim 7, wherein the ~~communication channels exhibit a plurality of X-DSL line codes including: a DMT line code and a CAP line code.~~ at least one communication channel comprises at least a first communication channel

App. No. 09/776,067
Amendment dated 4/4/2005
Reply to Office Action of 10/04/2004

Attn. Docket No. VELCP001X3

exhibiting a DMT line code and a second communication channel exhibiting a CAP line code.

Claims 9-21. (Canceled)